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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,925	12/28/2001	Troy Raymond Pesola	2001-094-NSC	2303

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STORAGE TECHNOLOGY CORPORATION
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EXAMINER

THAI, TUAN V

ART UNIT	PAPER NUMBER
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2186

DATE MAILED: 07/13/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

SR

Office Action Summary

Application No.

10/033,925

Applicant(s)

TROY ET AL.

Examiner

Tuan V. Thai

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Art Unit: 2186

Part III DETAILED ACTION

Response to Amendment

1. This office action is in response to Applicant's communication filed May 26, 2004. This amendment has been entered and carefully considered. Claims 1-33 remain pending in the application.

2. Applicant's arguments with respect to claims 1-33 have been considered but are not deemed to be persuasive.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6, 8-17, 19-22 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kikinis et al. (USPN: 5,964,848); hereinafter Kikinis.

As per claims 1 and 12, Kikinis teaches the invention as

Art Unit: 2186

claimed including method and apparatus for managing copies of virtual volume data comprises means for receiving an access request directed to an original volume is taught EIDE adapter for receiving access request directed to primary device 519 (e.g. see figure 5, column 4, lines 60 et seq.; means for mapping the access request to a secondary virtual volume is taught as the IDE controller firmware for allowing the mapping of the access requests to the secondary devices (e.g. see column 4, lines 67 bridging column 5, line 2; and means for performing the access request on one or more physical volumes associated with the secondary virtual volume is taught as CPU 511 for performing access request one the secondary volume after the firmware translation (e.g. see column 5, lines 3-5);

As per claims 2 and 13; Kikinis discloses the original volume (primary device) is associated with one or more original physical volumes (ST506 specification disk drive) and wherein one or more original physical volumes (ST506 specification disk drive) are different from one or more physical volumes (secondary devices as either CD-ROM or cartridge tape drive (e.g. see figure 5, abstract, column 5, lines 3-21));

As per claims 3 and 14; the further limitation of wherein the original volume is associated with one or more original physical volumes and wherein the one or more original volumes are the same as the one or more physical volumes is taught by Kikinis

Art Unit: 2186

since Kikinis discloses the original volume (primary device) is associated with one or more original physical volumes (ST506 specification disk drive) and wherein one or more original physical volumes can be implemented as other type of storage media (e.g. see abstract, column 6, lines 25 et seq.);

As per claims 4 and 15; wherein the one or more original physical volume are on the first type of data storage media (ST506 specification disk drive), and wherein the one or more physical volumes are on a second type of data storage media (CD-ROM or cartridge tape drive) (e.g. see figure 5, abstract, column 3, lines 34-38; column 5, lines 17-21);

As per claims 5 and 16; wherein the first type of data storage media and the second type of data storage media is one of magnetic tape media, magnetic disk media, optical media, floppy diskettes, CD-ROM media, DVD-ROM media, random access memory RAM, and memory card media (e.g. see abstract, column 5, lines 17-21; column 6, lines 25 et seq.);

As per claims 6 and 17; Kikinis discloses the primary device 519 having controller 521 for mapping and redirecting accesses to the secondary devices 525, 531 and 537; also for communicating to adapter 515 as well (e.g. see column 4, lines 65 et seq.);

As per claims 8 and 19; Kikinis discloses redirecting access request to the secondary memory devices by issuing the IDE command to select the secondary device when the physical volume

Art Unit: 2186

of the first secondary virtual volume is in idle state (e.g. see column 5, lines 33 et seq.; also see column 6, lines 5-16);

As per claims 9 and 20; wherein the first secondary virtual volume includes physical volumes on a first media type and the second secondary virtual volume includes physical volumes on a second media type (e.g. see abstract, column 5, lines 17-21; column 6, lines 25 et seq.);

As per claims 10 and 21; the further limitation of wherein the means for performing the access request on one or more physical volume associated with the secondary virtual volume includes means for converting the access request to a format suitable for the second media type is taught by Kikinis; for example, Kikinis teaches that firmware for the microcontroller 27 enables the controlling of the bus interface of CD-ROM 25 according to established protocols for IDE devices, the firmware also translates three-part data addresses transmitted from CPU 11 into corresponding CD-ROM sector addresses (e.g. see column 3, lines 61 et seq.);

As per claims 11 and 22; Kikinis discloses the access request is received utilizing EIDE adapter 515 on bus 513 through cable 517 (e.g. see figure 5); and wherein the means for performing the access request one or more physical volume associated with the secondary virtual volume includes means for converting (EIDE firmware) the access request from the first

Art Unit: 2186

communication protocol to a second communication protocol (e.g. see column 5, line 58 bridging column 6, line 4).

Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 7, 18 and 23-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikinis et al. (USPN: 5,964,848); hereinafter Kikinis.

As per claims 7 and 18, Kikinis discloses the invention as claimed, detailed above with respect to claims 1 and 12. Kikinis, however, does not particularly discloses the redirecting of access request *in response to a fault in a physical volume of the first secondary virtual volume*. It should be noted that Kikinis in fact discloses redirecting access request to the secondary memory devices by issuing the IDE command to select the secondary device when the physical volume of the first secondary

Art Unit: 2186

virtual volume is in idle state (e.g. see column 5, lines 33 et seq.). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the current invention was made to readily recognize (a) the idle state of the primary device is read to include the fault state as being claimed, and (b) by redirecting access request to other storage media(s) when a failure or fault in the primary device, it would ensure the continuous data operational cycle without introducing any additional delay or data corruption in the system, therefore system liability is greatly enhanced.

As per claims 23-33, Kikinis discloses the invention as claimed, detailed above with respect to claims 1-11 and 12-22; Kikinis however does not particularly disclose a computer-readable medium of instructions to be implemented on a computer as being claimed in claims 23-33. However, one of ordinary skill in the art would have recognized that computer readable medium (i.e., floppy, cd-rom, etc.) carrying computer-executable instructions for implementing a method, because it would facilitate the transporting and installing of the method on other systems, is generally well-known in the art. For example, a copy of the Microsoft Windows operating system can be found on a CD-ROM from which Windows can be installed onto other systems, which is a lot easier than running a long cable or hand typing the software onto another system. The examiner takes Official Notice

Art Unit: 2186

of this teaching. Therefore, it would have been obvious to put Kikinis's program on a computer readable medium, because it would facilitate the transporting, installing and implementing of Kikinis's program on other systems.

7. As per remark, Applicant's counsel contended that (a) "The cited reference does not teach the claimed limitations of receiving an access request directed to an original virtual volume; mapping the access request to a secondary virtual volume as claimed in claim 1 (page 9, first paragraph); (b) the passage cited by Examiner does not teach "redirecting access request to the secondary memory device" as Examiner characterizes Kikinis (page 10, sixth paragraph bridging page 11, fifth paragraph); and (c) the cited reference does not teach or suggest the claimed limitations in the context of virtual volumes (page 12, first paragraph).

With respect to (a) first of all, Examiner would like to emphasize that receiving access request directed to an original volume is taught as EIDE adapter which receives access request direct to the primary device 519 (column 4, lines 60 et seq.); noting that the controller firmware is the translating protocol which allows mapping of the access requests to multiple secondary IDE devices, for example, Kikinis clearly disclose that each of the secondary IDE device having an EIDE microcontroller and

Art Unit: 2186

firmware to translate between the EIDE protocol and the protocol of the particular device (e.g. see column 5, lines 19 et seq.); mapping process is part of the translating protocol which is inherently taught by Kikinis. With respect to (b); "redirecting access request to the secondary memory device" is taught by Kikinis since, as cited by the Examiner in the previous action, Kikinis clearly discloses the EIDE firmware allows the translation and mapping process to occur wherein it monitors the computer bus for a request to communicate with a secondary devices, and if no request is detected, communication with the primary is maintained; and if there is a request on the bus for communication with a secondary device, the EIDE will send a command on the peripheral cable to deactivate the primary and enable the secondary devices (the act of redirecting) (e.g. see column 4, lines 58 et seq.). With respect to (c); Examiner would like to emphasize that in considering a 35 USC 103 rejection, it is not strictly necessary that a reference or references explicitly suggest the claimed invention (this is tantamount to a 35 USC 102 reference if the modifications would have been obvious to those of ordinary skill in the art. It has been held that the test of obviousness is not whether the features of a secondary reference may be bodily incorporated into the primary references' structure, nor whether the claimed invention is expressly suggested in any one or all of the references; rather, the test

Art Unit: 2186

is what the combined teachings of the reference would have suggested to those of ordinary skill in the art. See In re Keller et al., 208 U.S.P.Q 871. In this particular instance, the virtual volume concept is taught by Kikinis, and being equivalent to the context of the non-conforming peripheral devices (abstract); in addition, the fault state is considered and being read-on by the idle state that is taught by Kikinis (column 5, lines 33 et seq.).

8. Applicant's arguments filed May 26, 2004 have been fully considered but they are not deemed to be persuasive.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan V. Thai whose telephone number is (703) 305-3842. The examiner can

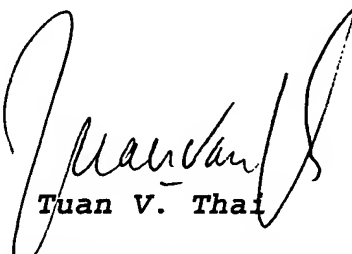
Art Unit: 2186

normally be reached on from 6:30 A.M. to 4:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mathew M. Kim can be reached on (703)-305-3821. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVT/July 11, 2004


Tuan V. Thai
PRIMARY EXAMINER
Group 2100